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## NOTES

### NEW TAXA OF *DIOCLEA* KUNTH (FABACEAE-DIOCLEINAE) FROM THE VENEZUELAN GUAYANA

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Study of new collections and reexamination of old collections for the *Flora of the Venezuelan Guayana* have necessitated the validation of names for three taxa.

*Dioclea* sect. *Dioclea* [sect. *Eudioclea* Benth. (1837)]

1. ***Dioclea holtiana*** Maxwell, sp. nov. TYPE: Venezuela. Territorio Federal Amazonas: Boca del Vichada, 13 Jan. 1930, *Holt & Gehriger 224* (holotype, US; isotype, VEN). [*Dioclea holtiana* Pittier, Bol. Técn. Minist. Agric. No. 5: 84, fig. 36. 1944, nom. inval. publ. sine descr. latin. Based on: Venezuela. Territorio Federal Amazonas: Boca del Vichada, Alto Orinoco, *Holt & Gehriger 240* (VEN n.v.).]

Foliola elliptica-ovata, vel late lanceolata. Inflorescentiae 40–60 cm longae. Flores 2.5–3.0 cm longi; bracteolis parvis, acutis, caducis; calycis tubo pubescenti, calycis supero lobo tubum multo superanti; vexillo elliptico-oblongo, emarginato; alis sine calcari. Ovarium ca. 10-ovulatum.

*Vines*, climbing in thickets and woods; stems terete, with erect, velutinous, rufous or somewhat canescent pubescence. *Leaves* trifoliolate; leaflets oval, elliptic-ovate or broadly lanceolate, 4.0–8.5 × (1–)2.5–5.0 cm, the upper surface sparsely pubescent, dense along the midrib, the lower surface villous with diffuse somewhat curly pubescence, the apices mostly obtuse, occasionally acute or rounded, the bases oblique, mostly rounded, occasionally cuneate or slightly cordate, the primary lateral veins in ca. 7 pairs; petioles 2.5–4.5 cm long, the rachis 1–3(–9) mm long, this, petiole, and pulvinules with dense erect pubescence; stipules not produced below insertion, lanceolate, ca. 2.5 mm long, caducous?; stipels setaceous, 1–2 mm long, apparently persistent. *Inflorescences* axillary, single, 40–60 cm long, with appressed, ascending, short pubescence, flowering to ca. ½ its length; tubercles clavate or somewhat elongate, the

lower occasionally long-stalked, the nodes distant; bracts lanceolate, ca. 2.5 mm long, mostly persistent; bracteoles ovate, ca. 2 mm long, caducous; pedicels 3–5 mm long. *Flowers* 2.5–3.0 cm long, the buds straight or slightly downcurved, the calyx tube ca. 6 mm long, sparsely pubescent, canescent velutinous inside, the upper lobe lanceolate, entire, ca. 10 mm long, entire, the lateral lobes 6–8 mm long, the lower lobe somewhat linear-lanceolate, ca. 10 mm long; petals with claws ca. 4 mm long, the standard reflexed, elliptic-oblong, emarginate, ca. 20 × 14 mm, the wings oblanceolate, ca. 23 × 8 mm, the auricle sharp-pointed, without a spur, the keels obliquely oblong or somewhat oblanceolate, 16 × 6 mm, weakly auriculate, the upper middle margin serrate; stamens 10, glabrous, pseudomonadelphous, the anthers perfect; pistil straight for ca. 16 mm then geniculate, rising distally ca. 5 mm, the ovary ca. 10 mm long, short-stipitate, with a disc collar, ca. 10-ovulate, canescent villous; style uniform, distally glabrous ca. 8 mm; stigma terminal, capitate. *Fruit* compressed, oblong, straight or slightly downcurved, to ca. 11.0 × 1.5 cm, dehiscent, the exocarp with appressed, white to ferruginous pubescence, the upper suture with a shallow parallel rib ca. 1.5 mm on each side, the lower suture lacking ribs, 8–11-seeded; seeds hard, oval or ellipsoid, to ca. 9 × 6 × 2 mm, the hilum linear, ca. 7 mm long.

*Additional specimens examined.* VENEZUELA. TERRITORIO FEDERAL AMAZONAS: Atures, cuenca del Río Cataniapo, *Guanches 1555* (MO); Atures, alrededores de Puerto Ayacucho, *Huber 1335* (US), *Huber & Cerda 1448* (US), *Stergios 3225* (PORT).

Pittier in 1945 again cited *Holt & Gehriger 240* as the *Dioclea holtiana* type. My selection of the type is based on the assumption that Killip at US selected *Holt & Gehriger 244* as the type with Pittier's knowledge. Pittier corresponded with Killip during this period regarding *Dioclea*. Many VEN herbarium collections of *Dioclea* have invalid

names written on the genus covers. "Tipo" is written on several sheets with these same names. There are sheets with illustrations of floral dissections attached, probably indicating intended publication and certainly indicating that Pittier's work was left unfinished. Few of these names warrant species rank, but *D. holtiana* is an exception.

The Guayana collections cited date from 8 December to 26 January. Collectors report the calyx dark purple or dark red-purple with the corolla rose-whitish, pallid purple, blue-purple to whitish, or white.

Collectors further report the species common in fields, woods, and thickets, from 90 to 150 m altitude. Flowers of the cited Guayana specimens are similar to those of the closely related *Dioclea albiflora* Cowan (1958). *Dioclea albiflora* has leaflets with denser pubescence, longer flowers, short-clawed wings with spurs, somewhat oblong keels, thinner fruits, and an almost-glabrous calyx except for the upper and lower midribs. While I consider *D. albiflora* a restricted Guayana endemic, *D. holtiana* ranges from Guayana into Vichada, Colombia, and north into other Venezuelan states.

*Dioclea virgata* (Rich.) Amshoff, On South American Papilionaceae. Meded. Bot. Mus. Herb. Rijks Univ. Utrecht 52: 69. 1939.

**2. *Dioclea virgata* (Rich.) Amshoff var. *crenata* Maxwell, var. nov.** TYPE: Brazil. Amapá: region of Calçoene, Calçoene River, coastal region, creeping liana, frequent in shrubby savanna, 20 Aug. 1962, *Pires & Cavalcante* 52528 (holotype, U; isotypes, NY, SP, US).

Flores ca. 2–3 cm longi; bracteolis ca. 6 × 4 mm; supero, medio margine carinae minute crenato vel dentato. Legumen pubescentia persistenti, canescenti, velutina vel tomentosa.

Stems twining, climbing. Leaflets mostly ovate, occasionally broadly lanceolate to elliptic, 6–11.5 × 3.5–5.5 cm, sparsely pubescent above and below, the apices abruptly acute or somewhat acuminate, the bases rounded to somewhat cordate, the primary lateral veins in ca. 7 pairs; petioles 2.5–4 cm long, the rachis to ca. 2 mm, this and petiole sparsely pubescent; stipules not produced; stipels setaceous. Inflorescences axillary or terminal, usually single, long, sparsely pubescent; tubercles mostly elongate, upcurved; bracts acute, persistent; bracteoles oval or orbicular, ca. 6 × 4 mm, occasionally larger; pedicels ca. 5 mm long. Flowers 2–3 cm long; keels nearly oblong, the upper middle margin usually with ca. 5 shallow dentate or crenate teeth, the wings obliquely ob-

ovate, usually without a spur; stamens 10, anthers perfect; pistil usually somewhat sigmoid, the ovary canescent. Fruit canescent pubescent, nearly tomentose, lanate or erect-velutinous.

*Additional specimens examined.* BRAZIL. AMAPÁ: coastal region, *Pires & Cavalcante* 51998 (NY, RB, VEN), 52026 (NY). AMAZONAS: Barcelos, *A.P. Duarte* 7239 (SIU); vicinity of Santarém, *Ginzberger s.n.* (W). PARÁ: Oriximiná, Rio Paru do Oeste, *Cid et al.* 2306 (NY); Oriximiná, 17 Sep. 1910, *Ducke* MG 10996 (BM); Montealegre, 24 Apr. 1916, *Ducke* MG 16048 (BM, RB); Santarém, *Silva & Souza* 2213 (NY). SURINAM: Saramacca River, *Pulle* 98 (U). VENEZUELA. AMAZONAS: Ll. Williams 14536 (US, VEN); Dept. Río Negro, *Stergios & Aymard* 4164 (PORT); Bajo Casiquiare, *Stergios & Aymard* 7328 (MO); Río Casiquiare, *Stergios et al.* 9772 (JEF, PORT).

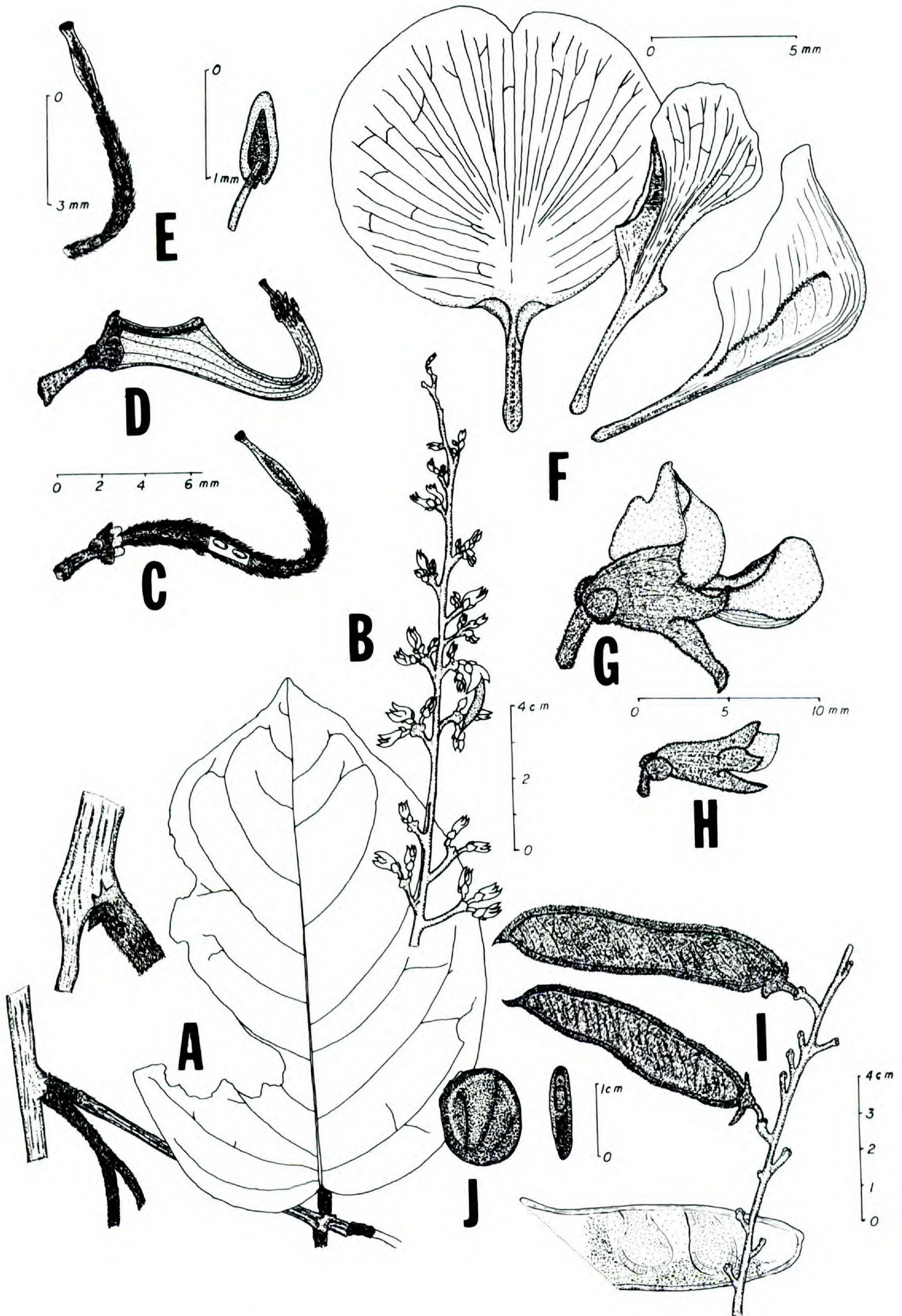
*Dioclea virgata* var. *crenata* is separated from var. *virgata* by having smaller flowers, pedicels, and bracteoles, and the keels lack fimbriations, and the fruit exocarp has short (mostly canescent) pubescence rather than the stiff, erect ferruginous hairs of var. *virgata*. An excellent illustration of var. *virgata* is found in the *Flora Brasiliensis* (plate 44, as *Dioclea lasiocarpa* Mart. ex Benth.).

*Dioclea* aff. sect. *Macrocarpon* Amshoff, On South American Papilionaceae. Meded. Bot. Mus. Herb. Rijks Univ. Utrecht 52: 69. 1939.

**3. *Dioclea steyermarkii* Maxwell, sp. nov.** TYPE: Venezuela. Territorio Federal Amazonas: Dept. Atures, 5°21'N, 66°15'W, 550 m, savannas, situated in a region of hills and ridges S and SE of Cerro Camani, *Huber* 4476 (holotype, US; isotypes, MYF n.v., NY). Figure 1.

Frutex ad ca. 1 m altus vel scandens. Foliola rigida-coriacea, lanceolata-ovata-elliptica, ad 14 × 10 cm, sparse pubescentia, stipulis non productis. Inflorescentiae axillares, ad 60 cm longae; tuberculis clavatis; bracteolis ovatis, ca. 2 × 1.5 mm, persistentibus. Flores ad 1.5 cm longi, calycis lobis tubum quasi aequantibus; vexillo orbiculari-ovato; alis oblanceolatis cum calcaribus; carinis triangularibus.

Vines or shrublets, to 1 m tall; stems terete, glabrescent. Leaves trifoliolate, the leaflets rigid coriaceous, the lamina elliptic to broadly ovate, to ca. 14 × 10 cm, the upper surface glabrous, the lower surface glabrescent, the apices rounded, then abruptly acute, the bases somewhat rounded to cordate, the primary lateral veins in 7–9 pairs; rachis and petioles sparsely pubescent; stipules acute-acuminate, not produced below insertion, ca. 4 mm long; stipels not seen. Inflorescences axillary or terminal, single, to ca. 60 cm long, mostly ferruginous tomentose, becoming glabrescent, flow-



ering for  $\frac{3}{4}$  or more of their lengths; tubercles long-stalked, each ca. 5-flowered; bracts not seen; bracteoles ovate, ca.  $2 \times 1.5$  mm, persistent; pedicels ca. 2–3 mm long. *Flowers* to 1.5 cm long, usually smaller, the buds  $\pm$  straight, the calyx tube to ca. 6 mm long, sparsely pubescent, sericeous inside extending up the lobes, the upper lobe obtuse, entire, the lower lobe longest, lanceolate, 5–7 mm long; petals with claws ca. 5 mm long, the standard strongly reflexed, orbicular or broadly ovate,  $10 \times 12$  mm, the wings oblanceolate to obliquely oblong, longer than the keels,  $7 \times 5$  mm, usually with a spur, the keels triangular to obliquely oblong,  $7 \times 6$  mm, the upper margin basally auriculate, entire, the beak obtuse or slightly out-curved; stamens 10, pseudomonadelphous, the base of the vexillary filament free ca. 2 mm, the anthers perfect; pistil somewhat sigmoidal, the ovary ca. 4 mm long, substipitate, hirsute, 2–4-ovulate; style glabrous distally ca. 5 mm, swollen; stigma apparently terminal. *Fruit* oblong to oblanceolate, compressed, ca. 9 cm long, ca. 1 cm wide proximally to ca. 2.6 cm distally, dehiscent, the exocarp densely ferruginous pubescent, 2–4-seeded; seeds ovoid, smooth, ca.  $14 \times 13 \times 3.5$  mm, the hilum oblong, ca. 4 mm long.

*Additional specimen examined.* VENEZUELA. TERRITORIO FEDERAL AMAZONAS: savannas, basin of Río Manapiare, *Huber 1201* (NY, US).

The ten perfect anthers and the oblong fruit with seeds evenly distributed suggest placing this

species in sect. *Macrocarpon*; however, the habit and general characteristics show a close affinity to *Dioclea coriacea* Benth. (1837) of sect. *Platylobium* Benth. (1859). *Dioclea coriacea* has the five perfect plus five imperfect anthers and is invariably two-ovulate, producing an oblanceolate, two-seeded fruit.

This species is named in honor of the late Dr. Julian Steyermark.

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FIGURE 1. *Dioclea steyermarkii*.—A. Leaflet attached to stem, *Huber 4476* (NY).—B. Upper portion of inflorescence, *Huber 4476* (NY).—C. Pistil showing positions of ovules, *Huber 1201* (NY).—D. Staminal sheath with pseudomonadelphous stamens, *Huber 1201* (NY).—E. Stigma, upper style, and anther, *Huber 1201* (NY).—F. Petals: standard, wing, and keel, *Huber 4476* (NY).—G. Flower, *Huber 4476* (US).—H. Flower bud, *Huber 4476* (US).—I. Portion of inflorescence with fruit and interior of mature fruit, *Huber 1201* (NY).—J. Seeds, *Huber 1201* (NY).